INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior

National Park Service

All or some of the information you provide may become available to the public.

OMB # (1024-0236)
Exp. Date (11/30/2010)
Form No. (10-226)

Reporting Year:	**Park:**	**Select the type of permit this report addresses:**
2006	Shenandoah NP	Scientific Study

Name of principal investigator or responsible official:	**Office Phone:**
Christopher Carlton	225-578-1838
Mailing address: Department of Entomology Life Science 402 Louisiana State University Baton Rouge, LA 70808 US	**Office FAX** **Office Email** ccarlt@lsu.edu

Additional investigators or key field assistants (first name, last name, office phone, office email)

Name: Alexey K. Tishechkin **Phone:** (225)-578-7255 **Email:** atishe1@lsu.edu

Project Title (maximum 300 characters):

Study of montane forest litter beetles of the Shenandoah National Park

Park-assigned Study or Activity #:	**Park-assigned Permit #:**	**Permit Start Date:**	**Permit Expiration Date:**
SHEN-00321	SHEN-2006-SCI-0005	May 02, 2006	Dec 02, 2007

Scientific Study Starting Date:	**Estimated Scientific Study Ending Date:**
May 02, 2006	Dec 02, 2007

For either a Scientific Study or a Science Education Activity, the status is:

Continuing

For a Scientific Study that is completed, please check each of the following that applies:

__ A final report has been provided to the park or will be provided to the park within the next two years

__ Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park

__ All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed

Activity Type:

Inventory

Subject/Discipline:

Invertebrates (Insects, Other)

Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

This study will complement the ongoing beetle inventories of the Great Smoky Mountains NP (part of the GSMNP All-Taxa Biodiversity Inventory, http://www.lsu.edu/departments/entomology/lsam/smokybeetles.htm) and the Blueridge Parkway NP (NPS study BLRI-00139). The Coleoptera component of the

GSMNP project is funded by a major grant from the National Science Foundation (DEB 0513611) to Carlton and V. M. Bayless. The proposed research will focus on distribution, taxonomy and systematics of several specialized forest litter- and soil-dwelling beetle genera in the families Carabidae, Leiodidae and Staphylinidae. All of these families have representatives with low dispersal abilities (wingless, often blind animals living in deep litter and/or soil), many of which are restricted to particular habitats (e.g., spruce-fir forests on mountain tops). In montane landscapes, these life history features promote the evolution of numerous species with restricted

distributional areas, often limited to particular mountain ranges or mountains.

The primary goal of this study is the discovery and eventual formal description of such restricted beetle species of the families Carabidae (genera Anillinus, Serranillus, Trechus), Leiodidae (Catopocerus) and Staphylinidae (Dasycerus, Geostiba, Parastenus) as well as collecting additional information on described species known to occur in the area. Integration of the data to be collected into comparative systematic and biogeographic analysis will allow addressing several general issues in understanding of the history of southern Appalachian biota and environment, patterns of animal endemism in the region and role of several landscape features as historic and current biogeographic barriers.

Collecting will be conducted by personnel from the Louisiana State Arthropod Museum (LSAM). Methods will include Berlese (litter) extraction and hand-collecting under bark and from exposed surfaces. Collecting will be conducted away from park visitors and with minimal impact to the targeted habitats. The beetle fraction obtained from collections will be sorted at the LSAM to the level of family and selected species within families that the faculty, staff, and graduate students at the LSAM are proficient at identifying. A network of collaborators has been established to facilitate identifications in support of the beetle working group of the ATBI. Data from all identified taxa will be submitted to the National Parkâ s system database and the Southern Appalachian Information Node species webpages project. Identified exemplars will be deposited in a NPS operated collection, as requested by Shenandoah Inventory and Monitoring personnel.

Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):

One field trip was conducted during May 2006 along the crest road, from Big Meadows to Little Devil Stairs.

Forest litter sifting and minor general hand collecting were conducted at five localities.

Significant Coleoptera findings included the following:

Family Carabidae

Genus Anillinus - a suspected specimen of A. virginiae was collected and may represent only the second known specimen of this species. Unfortunately, it is a female, so species identity cannot be confirmed.

Family Leiodidae

Genus Agathidium - new distributional data on endemic wingless Appalachian species were collected. Species identifications are incomplete due to the necessity of dissecting each specimen and preparing genitalia mounts.

Genera Catopocerus and Ptomaphagus - potentially, a new species has been discovered in each of these genera, pending further identification work and conferring with colleagues.

Family Chrysomelidae

Tribe Alticini - new material of high altitude wingless species was collected, with potential for new species discovery pending further identification work and conferring with colleagues (Note: a new species from this group was described from the Smokies representing the first North American record of wingless, high altitude forest litter inhabiting leaf beetles).

For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?

Yes

If "Yes", identify where the specimens currently are stored:

The following specimens are prepared for return and deposition to the Shenandoah NP Natural History Collection:

Carabidae

Agonum retractum - 1 specimen.

A. sordens - 1 specimen.

Gastrellarius blanchardi - 1 specimen.

G. honestus - 1 specimen.

Stenolophus orchropezus - 1 specimen.

Trichotichnus autumnalis - 2 specimens.

T. fulgens - 1 specimen.

Nitidulidae

Stelidota octomaculata - 5 specimens.

Staphylinidae: Pselaphinae

Actiastes foveicollis - 1 specimen.

Batrisodes lineaticollis - 1 specimen.

B. spp. (females) - 1 specimen.

Eutyphlus similis - 1 specimen.

Machaerodes carinatus - 12 specimens.

Nearctitychus sternalis - 1 specimen.

Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):	**Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):**
$0	$200

List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:

Paperwork Reduction Act Statement: A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.